## Claims

1. Device (10) for the automatic separation of the solid and liquid phase of a suspension (78) and for purifying magnetic microparticles (76) loaded with organic, in particular molecular biological or biochemical substances, which device (10) comprises a process area (12) with mechanisms which move in a cyclic manner for transporting the magnetic microparticles (76) in the x-direction, characterised in that a first guide (14) is arranged for supplying sample containers (P) in the x-direction and second guides (18) are arranged for supplying reagent containers (R) in the y-direction to the process area (12), wherein the second guides (18) extend in the y-direction at an angle ($\alpha$) of 30 to 150° to the x-direction, a carrier element (24), which can be moved back and forth in the x-direction, comprises carrier plates (24a, 24b, 24c) which can be lifted and lowered in the z-direction, individually and together, for magnetic or magnetisable transfer elements (28) which are arranged in a matrix shape, the reagent containers (R) can be positioned according to the grid of the transfer elements (28) by introduction, taking place at an angle ($\alpha$), into the process area (12) and can be rejected by ejection in the same direction into a waste collector.

2. Device (10) according to claim 1, characterised in that the transfer elements (28) are configured as preferably rod-shaped permanent magnets or electromagnets.

3. Device according to claim 1 or 2, characterised in that the lowermost part of the transfer elements (28) dipping into the sample (P) and reagent containers (R) is covered by a membrane (M) which can be lifted and lowered, can be deposited and taken off by means of a relative movement with respect to the transfer elements (28), and is preferably tubular or beaker-shaped.

4. Device (10) according to any one of claims 1 to 3, characterised in that the angle ($\alpha$) between the x- and y-direction is 90°.

5. Device according to any one of claims 1 to 4, characterised in that the relative movement of a transfer element (28) to the corresponding membrane (M), in the longitudinal direction (z) thereof, takes place by means of different lifting or lowering of the corresponding carrier plates (24b, 24c) and of the membranes (M).

6. Device (10) according to any one of claims 1 to 5, characterised in that a third guide is arranged for continuously supplying the membranes (M) at an angle (β) of 60 to 120° with respect to the x-direction.

7. Device (10) according to any one of claims 1 to 6, characterised in that a carrier block (46) with channels (48) for the reagent containers (R), which channels extend perpendicularly to the x-direction, is arranged in the process area (12) and each have two horizontal grooves (66) in the side walls (47) which are opposing at the same level and open on the end face.

8. Device (10) according to claim 6, characterised in that beams (72) which can be displaced horizontally back and forth, comprising permanent magnets (74) arranged in the region of the lowerable transfer elements (28), are arranged in recesses (50) extending parallel to the channels (48), to resuspend and mix the microparticles (76).

9. Sample and reagent container (P, R) and membranes (M) for use in a device (10) according to any one of claims 1 to 8, characterised in that they are configured as substantially strip-shaped, stackable cassettes with a plurality of beaker-shaped cavities (22, 36) corresponding to the grid of the transfer elements (28) in the carrier element (24).

10. Sample and reagent container (P, R) according to claim 9, characterised in that the preferably six to ten cavities (22) are preferably flat or oval in cross-section, their cross-sectional internal diameters preferably being only

a little larger than the corresponding dimensions of the transfer elements (28) or the pulled-on membranes (M).

11. Method for automatically separating the solid and liquid phase of a suspension and for purifying the solid phase comprising a device (10), sample containers (P) and reagent containers (R) according to any one of claims 1 to 10, characterised in that the forward movement of the carrier element (24) in the x-direction takes place with the use of permanent magnetic rods as transfer elements (28) with loaded, pulled-up membranes (M) or with the use of rod-shaped electromagnets with the current switched on, and the backward movement counter to the x-direction takes place with the use of permanent magnetic rods as transfer elements (28) without membranes (M) or with the use of rod-shaped electromagnets with the current switched off.

12. Method according to claim 11, characterised in that the filled sample containers (P) are firstly guided intermittently or continuously on the longitudinal side in the x-direction and the reagent containers (R) with different or at most partially the same fillings are guided continuously in the y-direction at the end face to the process area (12), on each initiation of a new operating cycle, one membrane (M) in each case is put over the rearmost transfer elements (28) in the x-direction, the latter are lowered into the sample container (P) disposed at the process area (12) and, after attachment of the magnetic microparticles (76) to the membrane (M), the transfer elements (28) with the membrane (M) are raised from the suspension liquids, the carrier element (24) is displaced forward in the x-direction by a grid unit, corresponding to the spacing (a) between two reagent containers (R), the particle-free sample container (P) is ejected into a waste container, the filled reagent containers (R) are simultaneously introduced into the process area (12), the carrier element (24) with the transfer elements (28) is lowered into the reagent container (R), the transfer elements (28) are pulled out of the membranes (M), the attached magnetic microparticles (76) are resuspended, the suspension (78) mixed,

the transfer element returned by the spacing (a) counter to the x-direction, while the membranes (M) remain in their position.

13. Method according to claim 11 or 12, characterised in that upon each movement of the carrier element (24) in the x-direction, the membranes (M) are entrained by one grid unit and are ejected at the end of the process area (12) into a waste collector.

14. Method according to any one of claims 11 to 13, characterised in that the last reagent container (R) in the x-direction, which is ejected from the process area (12), is supplied for a further use.

15. Method according to any one of claims 11 to 14, characterised in that a working cycle lasts 2 to 4 min.

16. Method according to any one of claims 11 to 15, characterised in that the reagent containers (R) are used with different reagents, but with the same reagents in all the cavities (22) of the same reagent container (R).